

MOTOR VEHICLE WIPER GEAR WITH  
BASE AND COVER

C18 Rec'd PCT/PTO

09/889079

1 JUL 2001

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[Motor vehicle wiper gear motor with base and core.]

BACKGROUND

This invention concerns wiping motor vehicle gear motors

One knows of such gear <sup>motors</sup> [motor] containing a motor equipped with a core and a reduction gear base equipped with a base rigidly fixed to the core.

A goal of the invention is to furnish a gear motor at once less noisy, in which there exists an electric current between the base and the core <sup>and</sup> allowing a precise positioning of these two <sup>elements</sup>.

SUMMARY  
In order to realize this goal, one conceives of, according to the invention, a motor vehicle wiper motor <sup>including</sup> [vehicle, comprises] a motor core and a reduction gear base, the core and base having metal parts [the]. The gear motor comprises a joint interposed between the core and the base, the joint comprising a sealing metal and at least a metal element in contact with the metal parts of the core and the base.

Thus, the sealing material reduces the noise. In addition, the metal element of the joint acts as a straight stop for a relatively precise positioning of the core and the base. In addition, it assures an electric <sup>components</sup> current between these two, for example <sup>for</sup> a uniform mass potential in the entire gear case of the reduction gear motor.

Advantageously, the gear motor has a fixing orifice contiguous to the metal element.

Advantageously, the metal element is imbedded in the sealing material.

Advantageously, the metal elements are at least two and are disjointed.

Advantageously, the gear motor comprises definitive fixing from the joint to the gear motor <sup>and in</sup> addition, the tentative fixing of the joint to either of the core or the base.

Thus, the joint is tentatively fixed to one of the pieces by waiting for the piercing of the other piece. One thus facilitates the management of the chain assembly <sup>by</sup> reducing the number of separate pieces.

Advantageously, the tentative fixing means comprises, specifically on the joint, at least a clipsage lug.

Advantageously, the gear motor has an access orifice in the lug in order to remove the temporary fixing means.

Advantageously, the gear motor contains the fixing means of the gear motor joint <sup>and in</sup> addition, the abutment means for the angular position in relation to the gear motor around an axis of the gear motor.

Thus, one makes the positioning of the joint easier in relation to the gear motor before the fixing via the definitive fixing means. This assures <sup>for example</sup> the alignment of the holes of the screw.

Advantageously, one of either the <sup>core</sup> core or the <sup>base</sup> base has at least a cylindrical sector, the joint having an opening able to receive the cylindrical sector projecting in the opening.

Advantageously, the joint material comprises a plastic material.

One also creates, according to the invention, <sup>due</sup> [comprises] a procedure consisting of the following steps:

- fixing the joint to one of the core and the base <sup>due</sup> [thanks] to the temporary fixing means;
- bringing the other of the core or the base onto the joint; and
- fixing between them the joint, the core, and the base <sup>due</sup> [thanks] to the definitive fixing means.

#### BRIEF DESCRIPTION OF THE DRAWING

The other characteristics and advantages of the invention will also appear more clearly in the following description of a preferred method of production given in a non-limiting example. In the attached drawings:

<sup>Figure</sup> [- figure] 1 is a perspective view of a gear motor according to a preferred method of production of the invention;

<sup>Figure</sup> [- figure] 2 is a partial spread view in perspective of the gear motor of figure 1;

<sup>Figure</sup> [- figure] 3 is a perspective view of the base of figure 1;

<sup>Figure</sup> [- figure] 4 is a view of the end of the core of figure 1;

<sup>Figure</sup> [- figure] 5 is an elevation view of the joint of figure 1;

<sup>Figure</sup> [- figures] 6 and 7 are detailed views of the joint of figure 5 cut according to the planes VI-VI and VII-VII.

<sup>Figure</sup> Illustrated <sup>in figures</sup> on figures 1 and 2, a motor vehicle wiper gear motor 2. <sup>Figure</sup> It comprises a core 4 and a reduction gear base having a base 6 and a closing plate 8 blocking an opening 10 of the base, visible in figure 3, and fixed to the base via clipsage means, tabs and lugs 12. The core 4, the base 6, and the closing plate 8 make up a closed crank case <sup>i.e.,</sup> for 2. Here, the core 4 and the base 6 are in metal, the closing plate 8 being a plastic material. In a known manner, the core 4 encloses a stator and a rotor, a shaft of which penetrates into the gear motor 2 in order to, after reduction, transmit a rotational movement to an exit shaft designed to guide <sup>the</sup> wiper blade.

<sup>Figure</sup> In reference to figures 1, 2, and 4, the core 4 has a generally cylindrical form blocked at an axial end and open at another axial end. This latter has an annular flat edge 16 of the core 4 and has two lugs or tabs 18 diametrically opposite from each other on both sides of an axis 20 of the core.

<sup>Figure</sup> In reference to figures 1 to 3, the base 6 has a cylindrical part 22 having an open axial end having an edge 24 that is notably identical to that of the core 4 and equipped with two tabs 26. The base 6 has three cylindrical sectors 28 extending the wall 22 of the base 6 following its axis and projecting from the edge 24.

These sectors 28 are disjointed and spaced such that they are arranged with three free spaces.

<sup>Figure</sup> In reference notably to figures 5 to 7, the gear motor 2 also comprises a joint 30 generally <sup>plate-like</sup> [plate] and generally having the shape of the edges 14 and 24, that is to say, a diamond-shaped form of which the closest corners are rounded or of a circular shape with two lugs 32 diametrically opposite in relation to an axis 20 of the joint. The joint has at its center a circular opening 34.

The joint 30 is able to be interposed following the axial direction between the edge 14 of the core and the edge 24 of the base <sup>6</sup>, coaxially to the edge of the base <sup>6</sup>. Each lug 32 of the joint is interposed between a lug 18 of the core and a tab 26 of the base <sup>6</sup>. The six tabs <sup>26</sup> have orifices 36 able to be in mutual coincidence in this position. The wall of the joint 30 is in contact and is a surface support on each of the two flat faces with respectively the face of the edge 14 of the core <sup>4</sup> and the face of the edge 24 of the base <sup>6</sup>.

The joint 30 has a peripheral edge 38 projecting from the wall, in the space of the side of the wall designed to be turned towards the core 4. While the gear motor <sup>2</sup> is mounted, this flange 38 covers the edge of the edge 14 of the core <sup>4</sup>. The flange <sup>38</sup> has a shape flared towards the exterior. <sup>The flange 38</sup> carries hooks or lugs 40 projecting from the flange <sup>38</sup> while simultaneously following the axial direction and radial direction towards the interior. These lugs 40, here there are four, reach to the junction of the tabs 32 with the circular zones of the joint. Thanks to the relative elasticity of the plastic material that <sup>forms the lugs 40</sup> makes them up, <sup>the lugs 40</sup> they are able to push against the rear face 42 of the edge 14 of the core <sup>4</sup> in order to temporarily fit the joint 30 to the core <sup>4</sup> via clipping.

The joint 30 comprises angular sections in relief or stops 44, here there are two, made up of extensions in the wall of the joint projecting in the opening 34 in the direction of the axis 20. Outside of the fixing of the joint 30 to the base 6, these <sup>stops or</sup> abutments 44 are inserted in the spaces between the cylindrical sectors 28. By butting up against these spaces towards the rotation of the joint in relation to the base <sup>6</sup> around the axis 20, <sup>the stops 44</sup> they facilitate the positioning of the joint, notably by directly placing the orifices 36 of the four <sup>32</sup> tabs in coincidence.

The joint comprises two elements 46 in metal, here in steel, at the level of the tabs 32. Each element 46 has a round ring shape and is characterized by having one of the orifices 36 at its center. Each element 46 has a peripheral rib <sup>rib 48</sup> 48 radially projecting from its external edge. Each <sup>ridge</sup> ridge is embedded in the plastic material of the sealing <sup>quality of the</sup> material of the joint. This material can be a plastic material or an elastomer. It is made up, here, of an alloy of copolymer butadiene styrene block (SBS) and polypropylene (PP). The elements 46 are thus made up of inserts partially embedded in the plastic material molded <sup>by</sup> this <sup>material</sup> latter. The sealing material of the joint allows the reduction of the noise of the gear motor <sup>2</sup>. The sealing material advantageously has a life of 43 shores D.

Each element 46 has two flat faces coming into surface contact with respectively the face of the edge 14 of the core <sup>4</sup> and the face of the edge 24 of the base <sup>6</sup>, thus forming a straight stop for the relative positioning, following the axis 20, of the base <sup>6</sup> and the core <sup>4</sup>, and assuring, in addition, the electric current between the base <sup>6</sup> and core <sup>4</sup>. Each element 46 has a thickness  $e$  less than the thickness  $f$  of the wall in plastic material of the joint 30 in anticipation of the crushing of this material during the tightening of the joint between the base <sup>6</sup> and the core <sup>4</sup> for the sealing of the gear motor <sup>2</sup> to water and <sup>(to)</sup> air.

During the fabrication of the gear motor <sup>2</sup>, one first fits the joint 30 to the core 4 via lugs 40 making up the temporary fixation means. One can then manipulate, store or transport the core <sup>4</sup> and the joint as one piece. One then returns the base 6 in order to interpose the joint between the base <sup>6</sup> and the core <sup>4</sup>. One fixes these three elements by screwing screws 50 crossing the tabs 26 of the core <sup>4</sup> and of the joint <sup>6</sup> and taken with the tabs 26 of the base <sup>6</sup>. The screws 50 make up the definitive fixation means. One will note that the lugs 40 can reside snapped onto the core <sup>4</sup> on the gear motor <sup>2</sup> in its final state.

The joint 30 has, in its wall, orifices 52 at the base of the respective lugs 40 in order to allow the introduction of a screwing tool to remove each lug from the core <sup>4</sup> if the separation from the joint and from the core <sup>4</sup> is necessary at one moment or another.

One can put in place the characteristics relative to the temporary fixation of the joint 30 to one of the core <sup>4</sup> and the base <sup>6</sup> and/or the stops 44, independent of the presence of the metallic elements 46 in the joint.

New page

{ Claims } what is claimed is:

1. Motor vehicle wiper gear motor, comprising a core motor (4) and a reduction gear base (6), the core and the base having metal parts, characterized by comprising a joint (30) interposed between the core (4) and the base (6), the joint comprising a sealing material and at least a metal element (46) in contact with metal parts of the core and the base.
2. Gear motor according to claim 1, characterized by having a fixation orifice (36) adjoining the metal element (46).
3. Gear motor according to claim 1 or 2, characterized by the metal element (46) being embedded in the sealing material.
4. Gear motor according to one of claims 1 to 3, characterized by there being two metal elements (46) and they are disjointed.
5. Gear motor according to one of claims 1 to 4, characterized by comprising definitive fixation means (50) of the joint (30) to the gear motor, and in addition the temporary fixation means (40) of the joint (30) to one of the core (4) or the base (6).
6. Gear motor according to claim 5, characterized by the temporary fixation means containing, notably on the joint (30), at least a clipping lug (40).
7. Gear motor according to claim 6, characterized by having an access orifice (52) in the lug (40) in order to remove the temporary fixation means.
8. Gear motor according to one of claims 1 to 7, characterized by comprising the fixation means (40, 50) of the joint (30) to the gear motor, and in addition the stop means (44) for the angular positioning of the joint (30) in relation to the gear motor around an axis (20) of the gear motor.

9. Gear motor according to one of claims 1 to 8, characterized by one of either the core (4) or the base (6) have at least a cylindrical sector (28), the joint having an opening (34) able to receive the cylindrical sector and at least a stop (44) projecting in the opening.

10. Gear motor according to one of claims 1 to 9, characterized by the joint material (30) containing a plastic material.

11. Manufacturing process of a gear motor to one of claims 5 to 7, characterized by comprising steps consisting of:

- fixing the joint (30) to one (4) of either the core (4) or the base (6) thanks to the temporary fixation means (40);
- returning the joint (30) to the other (6) between the core and the base; and
- fixation between them the joint, the core, and the base thanks to the definitive fixation means (50).

FOR INFORMATION

During the fabrication of the gear motor, one first fits the joint 30 to the core 4 via lugs 40 making up the temporary fixation means. One can then manipulate, store or transport the core and the joint as one piece. One then returns the base 6 in order to interpose the joint between the base and the core. One fixes these three elements by screwing screws 50 crossing the tabs 26 of the core and of the joint and taken with the tabs 26 of the base. The screws 50 make up the definitive fixation means. One will note that the lugs 40 can reside snapped onto the core on the gear motor in its final state.

The joint 30 has, in its wall, orifices 52 at the base of the respective lugs 40 in order to allow the introduction of a screwing tool to remove each lug from the core if the separation from the joint and from the core is necessary at one moment or another.

One can put in place the characteristics relative to the temporary fixation of the joint 30 to one of the core and the base and/or the stops 44, independent of the presence of the metallic elements 46 in the joint.

- cancel 11-11 and add new*
- Claims *Prel. Amendment*
- 12 *A* Motor vehicle wiper gear motor *including* comprising a core motor (4) and a reduction gear base (6), the core and the base having metal parts, characterized by comprising a joint (30) interposed between the core (4) and the base (6), the joint comprising a sealing material and at least a metal element (46) in contact with the metal parts of the core and the base. *the*
- 13 *12* Gear motor according to claim 1, characterized by having a fixation orifice (36) adjoining the metal element (46). *The gear*
- 14 *12* Gear motor according to claim 1 or 2, characterized by the metal element (46) being embedded in the sealing material. *The gear*
- 15 *12* Gear motor according to one of claims 1 to 3, characterized by there being two metal elements (46) and they are disjointed. *the two metal elements being*
- 16 *12* Gear motor according to one of claims 1 to 4, characterized by comprising definitive fixation means (50) of the joint (30) to the gear motor, and in addition the temporary fixation means (40) of the joint (30) to one of the core (4) or the base (6). *including*
- 17 *16* Gear motor according to claim 5, characterized by the temporary fixation means containing, notably on the joint (30), at least a clipping lug (40). *on the joint*
- 18 *17* Gear motor according to claim 6, characterized by having an access orifice (52) in the lug (40) in order to remove the temporary fixation means. *The gear*
- 19 *13* Gear motor according to one of claims 1 to 7, characterized by comprising the fixation means (40, 50) of the joint (30) to the gear motor, and in addition the stop means (44) for the angular positioning of the joint (30) in relation to the gear motor around an axis (20) of the gear motor. *core* *generating* *core*

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Motor vehicle wiper gear motor with base and core.

This invention concerns wiping motor vehicle gear motors

One knows of such gear motor, containing a motor equipped with a core and a reduction gear base equipped with a base rigidly fixed to the core.

A goal of the invention is to furnish a gear motor at once less noisy, in which there exists an electric current between the base and the core and allowing a precise positioning of these two.

In order to realize this goal, one conceives of, according to the invention, a motor vehicle wiper motor vehicle, comprises a motor core and a reduction gear base, the core and base having metal parts, the gear motor comprises a joint interposed between the core and the base, the joint comprising a sealing metal and at least a metal element in contact with the metal parts of the core and the base.

Thus, the sealing material reduces the noise. In addition, the metal element of the joint acts as a straight stop for a relatively precise positioning of the core and the base. In addition, it assures an electric current between these two, for example for a uniform mass potential in the entire gear case of the reduction gear motor.

Advantageously, the gear motor has a fixing orifice contiguous to the metal element.

Advantageously, the metal element is imbedded in the sealing material.

Advantageously, the metal elements are at least two and are disjointed.

Advantageously, the gear motor comprises definitive fixing from the joint to the gear motor, and in addition the tentative fixing of the joint to either of the core or the base.

Thus, the joint is tentatively fixed to one of the pieces by waiting for the piercing of the other piece. One thus facilitates the management of the chain assembly, by reducing the number of separate pieces.

Advantageously, the tentative fixing means comprises, specifically on the joint, at least a clipsage lug.

Advantageously, the gear motor has an access orifice in the lug in order to remove the temporary fixing means.

Advantageously, the gear motor contains the fixing means of the gear motor joint, and in addition the abutment means for the angular position in relation to the gear motor around an axis of the gear motor.

Thus, one makes the positioning of the joint easier in relation to the gear motor before the fixing via the definitive fixing means. This assures for example the alignment of the holes of the screw.

Advantageously, one of either the core or the base has at least a cylindrical sector, the joint having an opening able to receive the cylindrical sector projecting in the opening.



Advantageously, the joint material comprises a plastic material.

One also creates, according to the invention, comprises a procedure consisting of the following steps:

- fixing the joint to one of the core and the base thanks to the temporary fixing means;
- bringing the other of the core or the base onto the joint; and
- fixing between them the joint, the core, and the base thanks to the definitive fixing means.

The other characteristics and advantages of the invention will also appear more clearly in the following description of a preferred method of production given in a non-limiting example. In the attached drawings:

- figure 1 is a perspective view of a gear motor according to a preferred method of production of the invention;
- figure 2 is a partial spread view in perspective of the gear motor of figure 1;
- figure 3 is a perspective view of the base of figure 1;

figure 4 is a view of the end of the core of figure 1;

figure 5 is an elevation view of the joint of figure 1;

figures 6 and 7 are detailed views of the joint of figure 5 cut according to the planes VI-VI and VII-VII.

Illustrated on figures 1 and 2, a motor vehicle wiper gear motor 2. It comprises a motor having a core 4, and a reduction gear base having a base 6 and a closing plate 8 blocking an opening 10 of the base, visible in figure 3, and fixed to the base via clipsage means, tabs and lugs 12. The core 4, the base 6, and the closing plate 8 make up a closed crank case from the gear motor. Here, the core and the base are in metal, the closing plate 8 being a plastic material. In a known manner, the core 4 encloses a stator and a rotor, a shaft of which penetrates into the gear motor in order to, after reduction, transmit a rotational movement to an exit shaft designed to guide the wiper blade.

In reference to figures 1, 2, and 4, the core 4 has a generally cylindrical form blocked at an axial end and open at another axial end. This latter has an annular flat edge 16 of the core and has two lugs or tabs 18 diametrically opposite from each other on both sides of an axis 20 of the core.

In reference to figures 1 to 3, the base 6 has a cylindrical part 22 having an open axial end having an edge 24 that is notably identical to that of the core and equipped with two tabs 26. The base has three cylindrical sectors 28 extending the wall 22 of the base following its axis and projecting from the edge 24. These sectors 28 are disjointed and spaced such that they are arranged with three free spaces.

In reference notably to figures 5 to 7, the gear motor also comprises a joint 30 generally plate and generally having the shape of the edges 14 and 24, that is to say a diamond-shaped form of which the closest corners are rounded or of a circular shape with two lugs 32 diametrically opposite in relation to an axis 20 of the joint. The joint has at its center a circular opening 34.

The joint 30 is able to be interposed following the axial direction between the edge 14 of the core and the edge 24 of the base, coaxially to the edge of the base. Each lug 32 of the joint is interposed between a lug 18 of the core and a tab 26 of the base. The six tabs have orifices 36 able to be in mutual coincidence in this position. The wall of the joint 30 is in contact and is a surface support on each of the two flat faces with respectively the face of the edge 14 of the core and the face of the edge 24 of the base.

The joint 30 has a peripheral edge 38 projecting from the wall, in the space of the side of the wall designed to be turned towards the core 4. While the gear motor is mounted, this flange 38 covers the edge of the edge 14 of the core. The flange has a shape flared towards the exterior. It carries hooks or lugs 40 projecting from the flange while simultaneously following the axial direction and radial direction towards the interior. These lugs 40, here there are four, reach to the junction of the tabs 32 with the circular zones of the joint. Thanks to the relative elasticity of the plastic material that makes them up, they are able to push against the rear face 42 of the edge 14 of the core in order to temporarily fit the joint 30 to the core via clipping.

The joint 30 comprises angular sections in relief or stops 44, here there are two, made up of extensions in the wall of the joint projecting in the opening 34 in the direction of the axis 20. Outside of the fixing of the joint 30 to the base 6, these abutments 44 are inserted in the spaces between the cylindrical sectors 28. By butting up against these spaces towards the rotation of the joint in relation to the base around the axis 20, they facilitate the positioning of the joint, notably by directly placing the orifices 36 of the four tabs in coincidence.

The joint comprises two elements 46 in metal, here in steel, at the level of the tabs 32. Each element 46 has a round ring shape and is characterized by having one of the orifices 36 at its center. Each element 46 has a peripheral rib 48 radially projecting from its external edge. Each ridge is embedded in the plastic material of the sealing quality of the material of the joint. This material can be a plastic material or an elastomer. It is made up, here, of an alloy of copolymer butadiene styrene block (SBS) and polypropylene (PP). The elements 46 are thus made up of inserts partially embedded in the plastic material molded by this latter. The sealing material of the joint allows the reduction of the noise of the gear motor. The sealing material advantageously has a life of 43 shores D.

Each element 46 has two flat faces coming into surface contact with respectively the face of the edge 14 of the core and the face of the edge 24 of the base, thus forming a straight stop for the relative positioning, following the axis 20, of the base and the core, and assuring, in addition, the electric current between the base and core. Each element 46 has a thickness  $e$  less than the thickness  $f$  of the wall in plastic material of the joint 30 in anticipation of the crushing of this material during the tightening of the joint between the base and the core for the sealing of the gear motor to water and to air.